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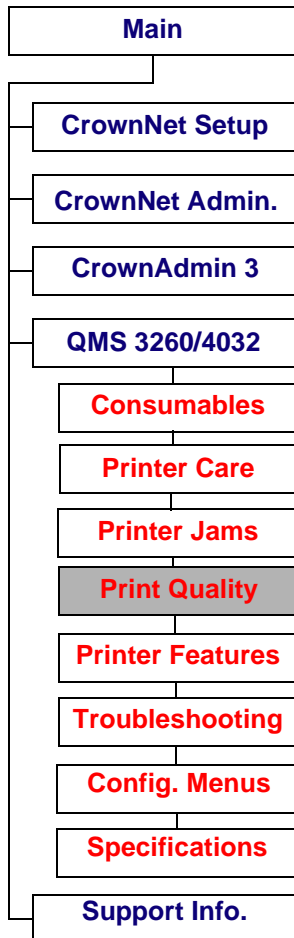
Support Info.

Print Quality

The ability of the printer to produce halftones allows you to add scanned images or halftone graphics to your documents. This section will explain some of the options available on the QMS 3260/4032 for halftone printing.
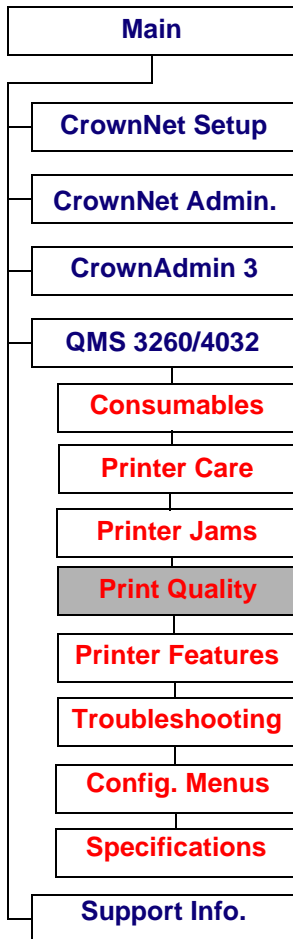
What are Halftones?

Continuous tone scanned images have to be converted to dot pattern images on a laser printer. Laser printers, like printing presses, only have the ability to print patterns of dots controlled by turning on and off the laser. Because of the limited resolving power of the eye halftones appear as continuous tone images. For an example hold a newspaper photograph very close to your eyes to see the halftone dots.

Halftone characteristics can be changed by settings available on your QMS 4060 Print System. The following factors can be used to adjust the halftone characteristics of your documents.

■ Printer resolution

■ Screen frequency and screen angles (Halftone types)

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There can be some side effects to changing these factors. Factors such as the number of gray levels, printer performance, and scanned image quality can be affected.

Gray Levels

Gray levels are a progressive series of gray tones between black and white. Gray levels are produced by varying the ratio of black to white half-tone dots. The number of gray levels depends on printer resolution and screen frequency.

Screen Frequency

Screen frequency or Lines Per Inch (LPI) is the number of lines of halftone dots that compose each inch of a halftone screen. The screen frequency determines the number of halftone dots used to represent gray levels in a given area.

The following formula shows the relationship between screen frequency, print resolution and gray levels. As the screen frequency increases, the number of gray levels decrease. If resolution is increased, the number of gray levels will also increase.
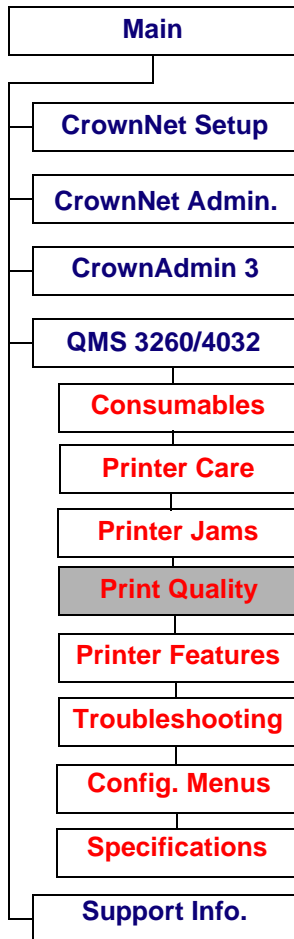
- gray levels = $(\text{resolution/screen frequency})^2 + 1$

You can change screen frequency by selecting the halftone type in the QMS 3260/4032 configuration menu, through your application, or by using the PostScript **setscreen** operator.

The extra gray levels available through higher resolution provide a smoother shift from the darkest black to very light grays.
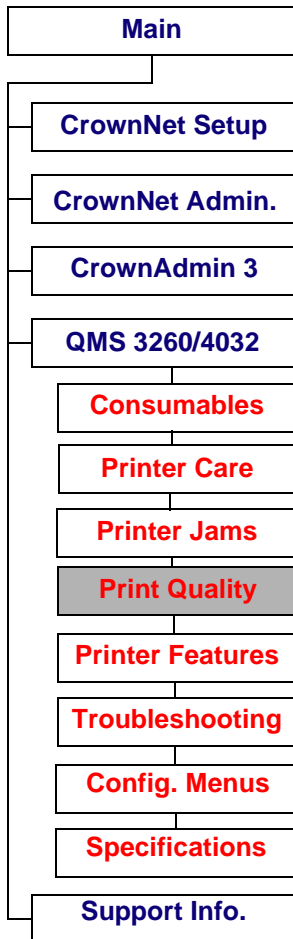
Screen Angle

A screen angle is the angle at which a halftone screen prints. The default screen angle for your QMS 4060 Print System is 45° at 300x300, and 600x600. This is the normal angle for black and white printers. Selecting advanced halftone types menu option will vary the screen angle. You can also change the screen angle through the PostScript **setscreen** operator.

Halftone Types

The ability of the printer to produce halftones allows you to add scanned images or halftone graphics to your documents.

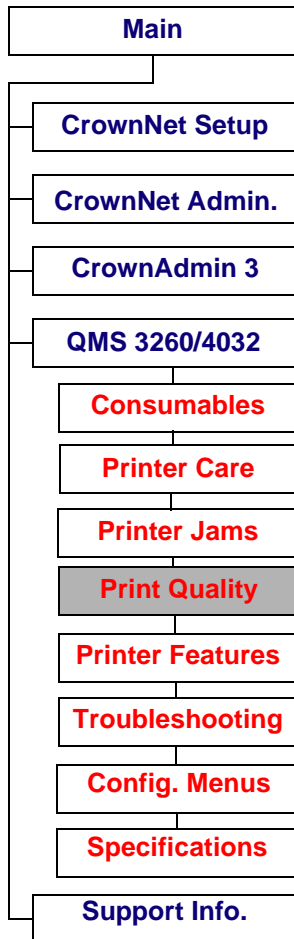Your printer provides three different types of halftones—basic, advanced, and standard.

Menu	Administration/Emulations/PostScript/Halftone Type
Choices	Basic—See the following table for details on screen frequency, screen angles, and gray levels. Standard—See the following table for details on screen frequency, screen angles, and gray levels. Advanced—See the following table for details on screen frequency, screen angles, and gray levels.
Default	Standard

These three options allow you to customize the smoothness of the printed image according to the number of grayscales it uses. The number of gray levels increase by increasing the halftone type and the printer resolution.

Halftone Type	300 DPI			600 DPI			1200 DPI		
	LPI	Angle	Level	LPI	Angle	Level	LPI	Angle	Level
Basic	53.03	45.0	33	70.71	45.0	73	84.85	45.0	200
Standard	53.03	45.0	129	106.06	45.0	129	106.06	45.0	256
Advanced	67.08	26.56	81	102.89	59.04	137	126.49	18.43	256

See chapter 3, "Additional Technical Information," in the *Reference*, for more detailed information on halftones and how to change their characteristics via the printer configuration menu.
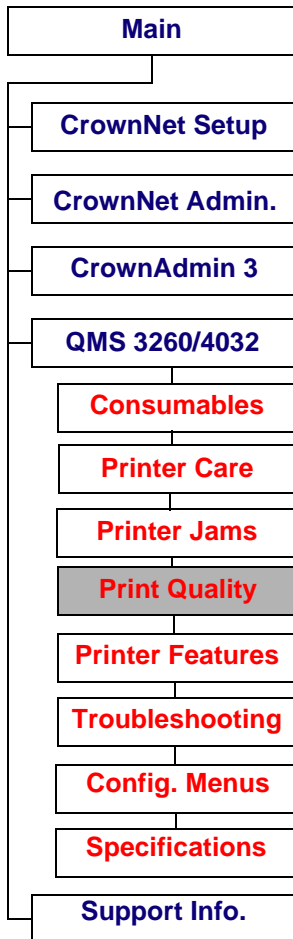
» **Note:** *The standard settings listed in this table are optimized for performance, and the advanced settings are optimized for quality.*

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Intensity

Sets the intensity for PostScript printing.

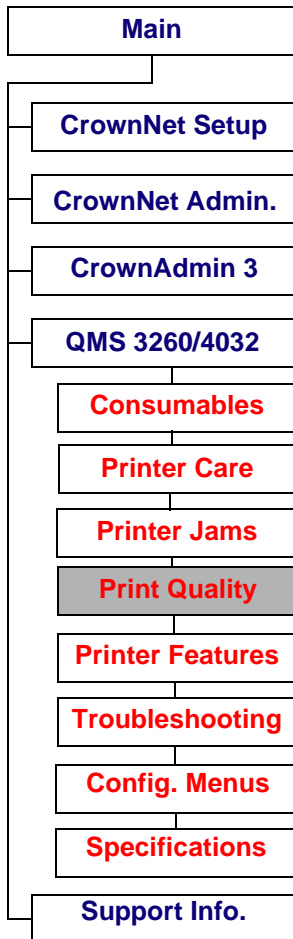| Menu	Administration/Emulations/PostScript/Intensity
Choices	Darkest, Darker, Nominal, Lighter, Lightest
Default	Nominal
Notes	Intensity uses the PostScript settransfer operator's functionality to make the print lighter or darker while maintaining the linearity of the grayscale.

About Print Density

Print density is the amount of toner placed on each dot, making the print appear lighter or darker. The higher the density, the darker the print looks and the higher the contrast is on the page. Toner density can be used to change contrast on scanned images, or to customize smoothing.

» **Note:** *If the print density is too light, make sure that the Administration/Engine/Print Quality/Normal option is turned on before making any adjustments. The Conserve Toner option saves toner by simulating draft-quality printing. (See chapter 2, "Printer Configuration," of the Reference for more information.)*

Adjust the print density using the Administration/Engine/Toner Density setting.

Menu	Administration/Engine/Toner Density
Choices	1—7
Default	4

About Print Resolution

Another way to sharpen the images printed on your pages is through setting the print resolution. Your printer is capable of printing at 300 and 600 dpi. This choice of resolutions allows you to customize the quality of your output according to its use. For pages requiring the best quality your printer can provide, set the printer resolution to 600 dpi.

Setting Default Resolution

This option sets the print engine's default resolution.

Menu	Administration/Engine/Def. Resolution
Purpose	Sets the default printer resolution.
Choices	300 dpi—300x300 dpi resolution. 600 dpi—600x600 dpi resolution. 1200 dpi—1200x600 dpi resolution or 1200 dpi—1200x1200 dpi resolution - optional with multi-res board
Default	600 dpi
Notes	If you want the printer to use a lower default resolution when you restore defaults, set this option to your choice (and make any other necessary configuration settings), and then use the Administration/Miscellaneous/ Save Defaults menu to save your custom defaults.